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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,261	05/17/2005	Shiquan Wu	GLH08896551	3757

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EXAMINER	
MARSH, OLIVIA MARIE	

ART UNIT	PAPER NUMBER
2617	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/535,261	WU ET AL.	
	Examiner	Art Unit	
	Olivia Marsh	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 May 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-44* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☒ Claim(s) *18-44* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ;
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 5 are rejected under 35 U.S.C. 102(e) as being anticipated by Hovers *et al* (U.S. 2006/0030365 A1).

As to **claim 1**, Hovers discloses:

A method of beam forming **(paragraphs 1, 37, and 48)** comprising the steps of:

in an appliqué intelligent antenna system **(16)**, montitoring broadcast channels **(control channel)** of a mobile wireless base station **(26, 29) (paragraphs 43, 55, and 69)**;

monitoring a frequency burst broadcast by the base station and synchronizing the appliqué system in frequency **(paragraphs 65, 70)**;

monitoring a synchronization burst in the broadcasting channel and synchronizing the appliqué system with the mobile wireless base station in time **(paragraphs 65, 83, and 94)**.

As to **claim 5**, Hovers discloses everything as applied in claim 1 and Hovers also discloses:

> the step of monitoring a synchronization burst includes the step of detecting locally the system information carried by synchronization burst **(paragraph 123)**.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hovers as applied to claim 1 above, and further in view of Soliman (US 6,687,501 B2).

As to **claim 2**, Hovers discloses everything as applied in claim 1 above; however, Hovers fails to disclose the step of the base station receiving an access response for a remote terminal and in response thereto, including any processing delay of the appliqué system as part of a round-trip delay for the remote terminal. The Examiner contends this feature was old and well known in the art at the time of invention as taught by <>.

In analogous art, Soliman teaches system and method for dynamically calibrating base station timing (column 1, lines 12-14). Soliman also teaches BS 106 is capable of measuring the round trip delay (RTD) encountered by a signal communicated from BS 106 to WD 110 and back to BS 106; and RTD encompasses the delay associated with a signal transmitted from BS 106 to WD 110 and the delay associated with a signal transmitted from WD 110 back to BS 106,

in response to the signal received from BS 106 (column 7, lines 33-39), reading on claimed "the step of the base station receiving an access response for a remote terminal and in response thereto, including any processing delay of the appliqué system as part of a round-trip delay for the remote terminal."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method and base station, disclosed by Hovers, the step of the base station receiving an access response for a remote terminal and in response thereto, including any processing delay of the appliqué system as part of a round-trip delay for the remote terminal, as taught by Soliman, to reduce the amount of human resources required to calibrate a base station.

As to **claim 6**, Hovers discloses everything as applied in claim 1 and Soliman teaches everything as applied in claim 2; and Hovers further discloses:

> step of detecting includes regularly checking a slot 0 of broadcast channel (BCCH) carrier **(paragraph 16)**.

As to **claim 7**, Hovers discloses everything as applied in claim 1 and Soliman teaches everything as applied in claim 2; Hovers discloses everything as applied in claim 6; and Hovers further discloses:

> step of detecting includes the steps of doing fast frequency synchronization and searching for a frame boundary by using both a frequency burst (FB) and a synchronization burst (SB) **(paragraphs 107, 116, and 123)**.

5. Claims 3-4 rejected under 35 U.S.C. 103(a) as being unpatentable over Hovers and Soliman as applied to claims 1-2 above, and further in view of Karimi *et al* (US 2001/046882 A1).

As to **claim 3**, Hovers and Soliman teach everything as applied in claims 1-2; however, neither Hovers nor Soliman teach step of the base station including any processing delay includes determine a timing advance value corresponding to a round-trip delay plus an appliqué system processing delay. The Examiner contends this feature was old and well known in the art at the time of invention as taught by Karimi.

In an analogous art, Karimi teaches timing advance information for each base station reusing a channel may be transmitted on the down link (paragraph 10). Karimi also teaches the base station produces a timing advance information based on a unique time-shifted version of the reference clock, thus compensating for different round-trip delays due to different positions of the mobile (paragraph 22), reading on claimed "step of the base station including any processing delay includes determine a timing advance value corresponding to a round-trip delay plus an appliqué system processing delay."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method and base station, taught by Hovers and Soliman, step of the base station including any processing delay includes determine a timing advance value corresponding to a round-trip delay plus an appliqué system processing delay, as taught by Karimi, to prevent propagation delays in paths from different mobile users.

As to **claim 4**, Hovers and Soliman teach everything as applied in claims 1-2; however, neither Hovers nor Soliman teach step of the base station transmitting the timing advance value to instruct the remote terminal to transmit earlier than the normal system time thereby compensating for both the round-trip delay and the appliqué system processing delay. The

Examiner contends this feature was old and well known in the art at the time of invention as taught by Karimi.

In an analogous art, Karimi teaches timing advance information for each base station reusing a channel may be transmitted on the down link (paragraph 10). Karimi also teaches the base station produces a timing advance information based on a unique time-shifted version of the reference clock, thus compensating for different round-trip delays due to different positions of the mobile (paragraph 22), reading on claimed "step of the base station transmitting the timing advance value to instruct the remote terminal to transmit earlier than the normal system time thereby compensating for both the round-trip delay and the appliqué system processing delay."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method and base station, taught by Hovers and Soliman, step of the base station transmitting the timing advance value to instruct the remote terminal to transmit earlier than the normal system time thereby compensating for both the round-trip delay and the appliqué system processing delay, as taught by Karimi, to prevent propagation delays in paths from different mobile users.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hover and Soliman, as applied to claims 1-2 and 6-7 above, and further in view of Kangas *et al* (U.S 6490454 B1).

As to **claim 8**, Hover and Soliman teach everything as applied in claims 1-2 and 6-7 above; however, neither Hover nor Soliman teaches steps of decoding the synchronization burst (SB) to determine three parts of the reduced TDMA frame number (RFN) T1, T2, T3' and to derive an exact frame number. The Examiner contends this feature was old and well known in the art at the time of invention as taught by Kangas.

In an analogous art, Kangas teaches base transceiver station (BTS) or other receiver performs the measurements on communication signals originating at a mobile communication unit (column 1, lines 18-20). Kangas also teaches the synchronization burst SB occurs in time slot 0 of frames 1, 11, 21, 31 and 41 of a 51-frame repeating sequence of TDMA frames transmitted on the BTS's BCCH (broadcast control channels) carrier (column 5, lines 55-58). Kangas also teaches data from the whole search window can be received in real time and stored for later processing, which is not realistically feasible if the search window is required to be 10 TDMA frames long, as is necessary to guarantee capturing the synchronization burst using conventional techniques (column 6, lines 63-67), reading on claimed "steps of decoding the synchronization burst (SB) to determine three parts of the reduced TDMA frame number (RFN) T1, T2, T3' and to derive an exact frame number."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method, taught by Hovers and Soliman, steps of decoding the synchronization burst (SB) to determine three parts of the reduced TDMA frame number (RFN) T1, T2, T3' and to derive an exact frame number, as taught by Kangas, to improve sensitivity in

detecting the downlink communication signals used for making observed time difference measurements at mobile stations.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hover, Soliman, and Kangas as applied to claims 1-2 and 6-8 above, and further in view of Eastmond *et al* (US 6,088,337 A).

As to **claim 9**, Hover, Soliman, and Kangas teach everything as applied in claims 1-2 and 6-8 above, neither Hover, Soliman, and Kangas teach a step of calculating the frequency-hopping pattern. The Examiner contends this feature was old and well known in the art at the time of invention as taught by Eastmond.

In an analogous art, Eastmond teaches space diversity in a time diversity duplex system (column 1, lines 28-29). Eastmond also teaches system detects that it is receiving interference from a system with the same color code, scrambling code or frequency hopping pattern, it may choose to restart with different choices of frequency hopping pattern, scrambling sequence and color code (column 21, lines 8-12). Eastmond also teaches each access point randomly selects a frequency hopping pattern (FHP) from a set of FHPs (column 22, lines 16-18), reading on claimed "a step of calculating the frequency-hopping pattern."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method, taught by Hover, Soliman, and Kangas, a step of calculating the frequency-hopping pattern, as taught by Eastmond, a method, access point device and peripheral device for providing space diversity in a time division duplex system.

8. Claims 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hovers, Soliman, and Eastmond as applied to claims 1-2 and 6-9 above, and further in view of Karimi *et al* (US 2001/046882 A1).

As to **claim 10**, Hovers, Soliman, and Eastmond teach everything as applied in claims 1-2 and 6-9 above; however neither Hovers, Soliman, and Eastmond teach step of decoding BCCH information to obtain timing advance for downlink beam forming power control. The Examiner contends this feature was old and well known in the art at the time of invention as taught by Karimi.

Karimi also teaches the transmission of one common broadcast signaling (broadcast control channel (BCCH), frequency correction channel (FCCH), and synchronization channel (SCH) within the cell (paragraph 23). Karimi also teaches the master BTS broadcasts the BCCH bursts, and the frequency-correction and synchronization bursts within the cell (paragraph 26), reading on claimed "step of decoding BCCH information to obtain timing advance for downlink beam forming power control."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method, taught by Hovers, Soliman, and Eastmond, step of decoding BCCH information to obtain timing advance for downlink beam forming power control, to prevent propagation delays in paths from different mobile users.

As to **claim 14**, Hovers, Soliman, and Eastmond teach everything as applied in claims 1-2 and 6-9, Karimi teaches everything as applied in claim 10, and Hovers further discloses:

> step of decoding a request access channel (RACH) from a remote terminal **(paragraph 180)**.

9. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hovers, Soliman, Eastmond, and Karimi as applied to claims 1-2 and 6-10 above, and further in view of Uhlik (U.S. 2004/0063450 A1).

As to **claim 11**, Hovers, Soliman, Eastmond, and Karimi teach everything as applied in claims **1-2 and 6-10; however, neither** Hovers, Soliman, Eastmond, nor Karimi teach a step of decoding a paging channel (PCH). The Examiner contends this feature was old and well known in the art at the time of invention as taught by Uhlik.

In an analogous art, Uhlik teaches the invention includes generating an access control burst to be transmitted from a radio to a first remote radio, and generating a traffic burst to be transmitted from the radio to a second remote radio, the traffic burst being part of an existing logical connection between the radio and the second remote radio (paragraph 8). Uhlik also teaches the base station also transmits 714 a page burst on a paging channel (PCH) which is an SDMA spatial channel occupying the same conventional channels as the RACH and the TCH (paragraph 82), reading on claimed "a step of decoding a paging channel (PCH)."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method, taught by Hovers, Soliman, Eastmond, and Karimi, a step of decoding a paging channel (PCH), to increase the efficiency of the wireless communication system.

10. Claims 12-13 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hovers, Soliman, Eastmond, and Karimi as applied to claims 1-2 and 6-10 above, and further in view of Dam *et al* (US 6,385,457 B1).

As to **claim 12**, Hovers, Soliman, Eastmond, and Karimi teach everything as applied in claims 1-2 and 6-10 above; however, neither Hovers, Soliman, Eastmond, nor Karimi teach step of decoding an access grant channel (AGCH). The Examiner contends this feature was old and well known in the art at the time of invention as taught by Dam.

In an analgous art, Dam teaches a method pertaining to a radio communications system in which the radio base stations are equipped with antenna arrays whose antenna lobes can be aimed in desired directions (column 1, lines 6-9). Dam also teaches the allocation channel or AGCH channel (Access Grant Channel) is a downlink channel that transmits channel allocation messages to an addressed mobile station; mobile stations that have recently requested access listen to this channel with the intention of detecting a channel allocation message, or access grant message, intended for the own mobile station (column 4, lines 52-58), reading on claimed "step of decoding an access grant channel (AGCH)."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method, taught by Hovers, Soliman, Eastmond, and Karimi, step of decoding an access grant channel (AGCH), as taught by Dam, to enable the antenna lobe to be directed in respect of a radio channel immediately a radio connection is moved to this channel.

As to **claim 13**, Hovers, Soliman, Eastmond, and Karimi teach everything as applied in claims 1-2 and 6-10 above; Dam teaches everything as applied in claim 12; however, neither Hovers, Soliman, Eastmond, nor Karimi teach step of determining mobile terminal positioning using information from the access grant terminal. The Examiner contends this feature was old and well known in the art at the time of invention as taught by Dam.

Dam also teaches a directional estimate based on the access request received from the mobile station MS1 is generated in step A3 (column 7, lines 29-30). Dam also teaches subsequent hereto, a new data-record is opened in a register for the mobile station MS1; this data-record includes a plurality of information fields; the directional estimate is written into one of these fields and the random number and TDMA frame number are written into another of said fields (column 7, lines 32-35), reading on claimed "step of determining mobile terminal positioning using information from the access grant terminal."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method, taught by Hovers, Soliman, Eastmond, and Karimi, step of decoding an access grant channel (AGCH), as taught by Dam, step of determining mobile terminal positioning using information from the access grant terminal, also taught by Dam, to enable the antenna lobe to be directed in respect of a radio channel immediately a radio connection is moved to this channel.

As to **claim 15**, Hovers, Soliman, Eastmond, and Karimi teach everything as applied in claims 1-2 and 6-10; however, neither Hovers, Soliman, Eastmond, nor Karimi teach step of decoding an access grant channel (AGCH). The Examiner contends this feature was old and well known in the art at the time of invention as taught by Dam.

In an analgous art, Dam teaches a method pertaining to a radio communications system in which the radio base stations are equipped with antenna arrays whose antenna lobes can be aimed in desired directions (column 1, lines 6-9). Dam also teaches the allocation channel or AGCH channel (Access Grant Channel) is a downlink channel that transmits channel allocation messages to an addressed mobile station; mobile stations that have recently requested access listen to this channel with the intention of detecting a channel allocation message, or access

grant message, intended for the own mobile station (column 4, lines 52-58), reading on claimed "step of decoding an access grant channel (AGCH)."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method, taught by Hovers, Soliman, Eastmond, and Karimi, step of decoding an access grant channel (AGCH), as taught by Dam, to enable the antenna lobe to be directed in respect of a radio channel immediately a radio connection is moved to this channel.

As to **claim 16**, Hovers, Soliman, Eastmond, and Karimi teach everything as applied in claims 1-2 and 6-10 above; Dam teaches everything as applied in claim 15; however, neither Hovers, Soliman, Eastmond, nor Karimi teach step of determining mobile terminal positioning using information from the access grant terminal. The Examiner contends this feature was old and well known in the art at the time of invention as taught by Dam.

Dam also teaches a directional estimate based on the access request received from the mobile station MS1 is generated in step A3 (column 7, lines 29-30). Dam also teaches subsequent hereto, a new data-record is opened in a register for the mobile station MS1; this data-record includes a plurality of information fields; the directional estimate is written into one of these fields and the random number and TDMA frame number are written into another of said fields (column 7, lines 32-35), reading on claimed "step of determining mobile terminal positioning using information from the access grant terminal."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method, taught by Hovers, Soliman, Eastmond, and Karimi, step of decoding an access grant channel (AGCH), as taught by Dam, step of determining mobile terminal positioning using information from the access grant terminal, also taught by Dam, to enable the antenna lobe to be directed in respect of a radio channel immediately a radio connection is moved to this channel.

11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hovers, Soliman, Eastmond, Karimi, and Dam as applied to claims 1-2, 6-10 and 15-16 above, and further in view of Fattouche *et al* (U.S. 6,330,452 B1).

As to **claim 17**, Hovers, Soliman, Eastmond, Karimi, and Dam teach everything as applied in claims 1-2, 6-10 and 15-16 above; however, neither Hovers, Soliman, Eastmond, Karimi, nor Dam teach the step of determining the mobile terminal position includes the step of determining angle of arrival of a response received from the remote terminal. The Examiner contends this feature was old and well known in the art at the time of invention as taught by Fattouche.

In an analogous art, Fattouche teaches location finding and tracking of Advanced Mobile Phone System (AMPs) Frequency Division Multiple Access (FDMA) Cellular Telephones (CTs) using a network-based Wireless Location System (WLS) (column 1, lines 5-9). Fattouche also teaches the horizontally separated diversity antennas as a mean to estimate the horizontal Angle Of Arrival (AOA) of the received radio signal at a MS; and when the diversity antennas are vertically separated, either the elevation AOA is estimated or the received signals from all antennas at a given MS are combined (column 6, lines 6-11) reading on claimed "the step of determining angle of arrival of a response received from the remote terminal."

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to require the method, taught by Hovers, Soliman, Eastmond, Karimi, and Dam, the step of determining angle of arrival of a response received from the remote terminal, as taught by Fattouche, to determine the location of a mobile device without modification to the cellular antenna infrastructure.

Allowable Subject Matter

12. Claims 18-44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olivia Marsh whose telephone number is 571-272-7912. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on 571-272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NICK CORSARO
PRIMARY EXAMINER